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DDAS Accident Report

Accident details

Report date: 31/01/2008	Accident number: 542
Accident time: 11:10	Accident Date: 09/01/2007
Where it occurred: Ar Rafiyah District, Basrah Province, Southern Iraq	Country: Iraq
Primary cause: Inadequate training (?)	Secondary cause: Field control inadequacy (?)
Class: Handling accident	Date of main report: 09/01/2007
ID original source: BOI 001 091007	Name of source: [Name removed]
Organisation: [Name removed]	
Mine/device: BLU-61A/B	Ground condition: dry/dusty
Date record created:	Date last modified: 31/01/2008
No of victims: 2	No of documents: 2

Map details

Longitude:	Latitude:
Alt. coord. system: MGRS 38 QR	Coordinates fixed by:
Map east: 34130	Map north: 64656
Map scale:	Map series:
Map edition:	Map sheet:
Map name:	

Accident Notes

inadequate training (?)
no independent investigation available (?)
protective equipment not worn (?)
safety distances ignored (?)
visor not worn or worn raised (?)

Accident report

The report of this accident was made available in January 2008 as several files. Their conversion for database entry means that some of the original formatting has been lost. The substance of the report is reproduced below, edited for anonymity. The original files are held on record. Text in [] is editorial.

SUBJECT: BOARD OF INQUIRY REPORT

FOR [Demining group] UXO ACCIDENT IN AR RAFIYAH DISTRICT, SOUTHERN IRAQ, 09 January 2007

DATE: 12 January 2007

FILE REFERENCE: BOI 001 091007

1. BACKGROUND

1.1 A convening order for a Board of Inquiry (BOI) was received from the [Demining group] Programme Manager, [Name removed] at 1600 hrs 09 January 2007. The purpose of the BOI was to investigate a UXO accident which occurred during UXO clearance activities at approx 1110 hrs, 09 Jan 2007, involving members of the [Demining group] in Ar Rafiyah District, Basrah Province, Southern Iraq.

2. BOI MEMBERS

BOI PRESIDENT [Name removed] [Demining group] Operations Manager

BOI MEMBER [Name removed] [Demining group]G Technical Advisor

BOI MEMBER [Name removed] [Other demining group] Technical Supervisor

2.1 The representative for the Regional Mine Action Centre, South did not show up for his transportation from Basrah to the [Demining group] compound as scheduled. He therefore did not attend the onsite investigation nor take part in the BOI.

3. CASUALTIES

CASUALTY NUMBER ONE [Victim No.1] (Supervisor)

CASUALTY NUMBER TWO [Victim No.2] (BAC Team Operator [Also listed as a Team Leader])

3.1 [Victim No.1] sustained fatal injuries during the accident and died at the scene. The force of the detonation caused traumatic amputation of the left arm at the shoulder and traumatic amputation of the right arm at the elbow. The blast also ruptured the chest and abdominal wall exposing the viscera.

3.2 [Victim No.2] sustained non-life threatening injuries due to metallic fragmentation. He was administered First Aid at the scene and evacuated to the hospital in Az Zubayr and subsequently moved to the hospital in Basrah. [Victim No.2] sustained fragmentation wounds to the left shoulder, back, both legs.

4. BODY RECOVERY

4.1 [Victim No.1]'s remains were recovered at 1305 hrs, 09 Jan 2007. International members of the recovery team were [Name removed] ([Demining group] Ops Mgr), [Name removed] ([Demining group] TA) and [Name removed] ([Demining group] Log Mgr). Dr [Name removed], [Demining group]'s resident doctor attended as the medical expert and accompanied the remains to the Basrah mortuary as well as conducting the police liaison and preparing all necessary paperwork.

4.2 Time at the accident site was limited strictly to body recovery and taking initial photographs. This was due to burning debris and cluster munitions which had been subjected to fire.

5. WITNESS STATEMENTS

5.1 Mr [Name removed] conducted interviews with all relevant personnel who were in the area at the time of the accident. These persons were:

[Name removed] (EOD Team Leader)

[Name removed] (BAC Team Leader)

[Name removed] (Security Team Leader)

[Name removed] (Casualty # 2)

[Name removed] (Medic)

5.2 The above mentioned members were the first to arrive at the scene (within 5 mins) but were not at the scene of the accident at the time of the detonation.

5.3 The only surviving member at the scene of the accident, [Victim No.2] was interviewed in hospital by the [Demining group]'s National Operations Manager, [Name removed], with Dr [Name removed] as witness.

5.4 Witness statements will be found in Annex A. [See Statements.]

6. BOI ACTIVITIES

6.1 The BOI members were chosen at 1200 hrs 10 Jan 2007. The onsite investigation was scheduled for 0900 hrs 11 Jan 2007. It was planned to take more photographs and produce a sketch of the accident site as well as a more detailed inspection of the vehicle remains.

6.2 The BOI members formed up at the [Other demining group] compound and proceeded to the accident site. Forty eight hours had been allowed for the vehicle and UXO to cool; during this time scavengers had visited the site. Vital evidence had obviously been destroyed, however enough evidence remained, which combined with photographs taken on 09 Jan 2007 enabled the board to form a consensus as to what had occurred.

6.3 A draft of the BOI report was written and distributed to the Board Members for comment prior to the final release.

7. SEQUENCE OF EVENTS

7.1 At approx. 0725 hrs 09 January 2007 [Demining group] National Supervisor, [Victim No.1] with EOD Team 5 and BAC Team 5 deployed to the area of MGRS GS 33/64. (MAP: AR RAFIYAH; 1-NIMA; K743; 5450 I). The aim of the task was to clear this GS and adjacent GSs of Unexploded Ordnance.

7.2 The clearance was conducted according to [Demining group] SOPs with one demolition carried out at 0945 hrs, the usual breakfast time at 1000 hrs and a second demolition at 1045 hrs.

7.3 At the time of the second demolition all teams were in the Control Point with an outer security ring deployed by the Arctic Response security team.

7.4 At approx 1100 hrs [Victim No.1] instructed everyone to remain in the Control Point while he and [Victim No.2], a team member from EOD Team 5 checked the next work area.

7.5 At approx 1110 hrs an explosion was heard followed by a radio call for medical assistance. The location of the accident was MGRS 38 RQU 34670 65561

7.6 The first persons to arrive at the scene were [Name removed] (Security Tm Ldr), [Name removed] (EOD Tm Ldr) and [Name removed] (Medic). All other team members remained in the Control Point.

7.7 At the scene, [Name removed] went directly to [Victim No.1]'s assistance but noting the extent of his injuries decided that the subject was deceased. Concurrently, [Name removed] and [Name removed] immediately assisted the second casualty, [Victim No.2] who was laying on the ground approx 50 m from the seat of the explosion.

7.8 [Name removed] returned to assist [Name removed] and [Name removed] to give First Aid to [Victim No.2]. At this time a second detonation occurred in very close proximity to the first and shortly thereafter a third and even larger detonation was heard.

7.9 [Victim No.2] was dispatched to the Az Zubayr Hospital. All operations were stood down and all teams returned to the [Demining group] compound. A security detail and EOD team remained to secure the scene, while a body recovery team (See Para 4) was organized and dispatched. Statements from key witnesses were taken by [Name removed] upon their return to the [Demining group] Compound.

8. ACCIDENT SITE DESCRIPTION

8.1 Central to the site is a low berm running in a general NW to SE direction on a bearing of 136°. [Victim No.1]'s vehicle was backed against this berm and pointing in a SW direction. A second berm running NE on a bearing of 38°, forms a 90° angle at their junction. At the junction, an opening has been made to allow vehicle access. The vehicle was positioned 30 metres from this junction.

8.2 The vehicle (Toyota Hilux) had been destroyed by the effects of both explosive detonation(s) and a subsequent fire. The cab's roof was found 50 metres SW of the vehicle on a bearing of 188°.



[One side of the pick-up, showing how the load bay (bed) has been destroyed.]

8.3 The bed of the vehicle was gone. Parts of the side panels were found as far as 100 metres from the vehicle.

8.4 [Victim No.1]'s remains lay on the driver's side of the vehicle close to the left rear wheel. The vehicle tailgate and part of the vehicle bed had been blown off and was covering the body. The part of the vehicle bed covering the remains was missing a section in the area corresponding to that directly behind the right corner of the cab and forward of the right rear wheel. The section of frame brace directly beneath this location had been cut, the ends indicating a detonation from above. Beneath this section was found a crater 56 cm in diameter and 9 cm deep. This also indicated a detonation from the same locality.



[The crater and damaged chassis of the vehicle.]

8.5 The direction of the debris field was 85% to the front and left (driver's side) of the vehicle. The farthest piece was the left tie-down rail at 104 metres. The other 10% was to the right (passenger's side) and consisted of a BLU 63 and one 125 mm Anti Tank projectile. One small piece of the vehicle bed was found 40 metres to the rear; also to the rear at 20 and 30 metres were the two halves of a BLU 63, these showed fragmentation damage and were coated with diesel fuel.



[The vehicle cab from behind.]

8.6 On the left side of the vehicle starting at approx two metres from it and extending in staggered line to approx 15 metres were 14 BLU 61 and 63 cluster munitions. These items did not show fragmentation damage nor were they coated with diesel fuel.



[Each red flag marks a BLU submunition on the ground surface, the BLU 61 is 99mm diameter and there appears to be one on the right, in between two smaller BLU 63s.]

8.7 The site sketch will be found in Annex B. [Not included: held on file]

9. CONSENSUS OF THE BOI

9.1 Neither casualty was wearing PPE and had they only been conducting a visual site check as planned there would have been no reason to wear it. In the case of [Victim No.1] wearing PPE would not have prevented his death. In the case of [Victim No.2] who was farther from the detonation, PPE would have lessened the severity of his injuries to his shoulder, back and to a certain extent his legs.

9.2 The types of injuries sustained by [Victim No.1] indicates that he was holding an item of UXO (most likely a BLU) with both hands in front of his midsection when it detonated. This detonation started a chain reaction by causing a second item of UXO (type and location undetermined) to detonate. This second detonation caused a third and larger detonation located in the vehicle bed behind the right side passenger cab, forward of the right wheel. The type and amount of UXO in the third detonation is unknown.

9.3 The actual events that day are open to speculation and may never be known. The presence of so many BLUs in such close proximity to the vehicle is suspicious. An experienced operator would never have backed his vehicle into an area so contaminated. So, were they on the ground already or were they moved there after parking the vehicle?

Did he have BLUs in the back of the truck? He was taught to never transport BLUs nor move them under any circumstances. What caused the second detonation and where was it located? What type of UXO caused such extensive damage in the third detonation?

9.4 Barring the unanswered questions relating to this incident it is agreed by all board members that this accident was preventable and that he was holding a BLU when it detonated. His motivation for doing this is unknown.

9.5 The reaction of the members to this accident were first class, especially the Team Leaders and Security. The medic, [Name removed] performed brilliantly under very stressful circumstances. The overall response was conducted quickly, calmly and professionally.

10 RECOMMENDATIONS

10.1 Retraining of all personnel in General Safety, specifically in dealing with Cluster Munitions, transporting of UXO, and the wearing of PPE.

10.2 Operational responsibility which had been handed over to the national staff should be returned to international members and reassessed after three months. At that time, operational responsibility may again be given to the national staff.

Signed: BOI President. [Demining group] Operations Manager, 12 January 2007

ACCIDENT TIMELINE

Unconfirmed fatality: Field Supervisor [Victim No.1] – male Iraqi DOB 27 Jun 61

Confirmed injured: Team Leader [Victim No.2] – male Iraqi DOB 03 Oct 82

Location GRID: QR 34130 64656 (a designated task site)

Time of incident: 11:30 Basra time approximately

Nature of Accident: First indications are that they could have run over UXO or had an accident with ordnance in the vehicle.

[Timeline heavily edited to remove call-signs and other identifiers.]

11:30: call by VHF received from field security unit with the [Demining group] call sign

11:35: incident team assembled in comms room

11:50 Indicators point to this as being very close to the time the report was received. The actual event occurred closer to 11:30

11:50: incident confirmed - vehicle still burning unable to move [Victim No.1]. This is the actual receipt of the first call. The incident team gathered as the seriousness of the event became apparent.

11:59 A time stamped picture shows QRT assembled and ready for departure. They waited for the investigation team as noted below.

12:05: assembled QRT and added Doctor, International Ops Mgr, TA and International Log Mgr.

12:12 A time stamped picture shows final briefing of QRT.

12:14 A time stamped picture shows QRT and investigation team departing.

12:15: QRT departs to accident site.

12:20: injured [Victim No.2] received at Az Zubayr hospital.

12:40 injured [Victim No.2] transferred to Al Jamhory (the Republican Hospital) in Basra with 2 brothers and 1 [Demining group] medic.

12:48 Eye witness confirms fatality – [Victim No.1].

12:55 QRT arrives at accident site; Doctor confirms fatality by telephone to comms centre and receives NOK information to pass on to family.

13:05 Returned team members from the site report to [Name removed] that it appeared [Victim No.1] had been preparing a dems for a BLU when the accident occurred. [Name removed] is documenting statements as part of the initial investigation.

13:20 National RMAC Manager [Name removed], notified "[Demining group] has had a serious accident" and details will follow when possible.

13:25 confirms vehicle (a Toyota HiLux) is completely destroyed and will be left in situ. International Log Mgr at the site with the QRT approves.

13:42 Doctor and R33 (security escort from QRT), take body to hospital.

13:45 TA [Name removed] reports that information from the field from TA [Name removed] now seems to indicate that as supervisor [Victim No.1] was looking for additional work areas a short distance away from the day's assignment and stopped in an area heavily contaminated with BLU 63 AND BLU 61. He got out of the truck and something happened. He was not working on a dems.

14:12 Site abandoned.

14:28 Doctor deposits the remains at the Al Jamhory hospital morgue. He will then report to the Police station to complete the necessary paperwork and bring it back to the hospital to release the remains to the family.

14:40 Tea is prepared and served in camp to the teams that were at the work site and an informal critical incident stress debrief is initiated.

Signed: PM [Demining group] Iraq, 10 Jan 07

Victim Report

Victim number: 714	Name: [Name removed]
Age: 45	Gender: Male
Status: supervisory	Fit for work: DECEASED
Compensation: Not made available	Time to hospital: Not appropriate
Protection issued: Not recorded	Protection used: None

Summary of injuries:

severe Abdomen

severe Chest

AMPUTATION/LOSS: Arm Above elbow; Arm Through elbow

FATAL

COMMENT: No Medical report was made available.

Victim Report

Victim number: 715	Name: [Name removed]
Age: 24	Gender: Male
Status: supervisory	Fit for work: not known
Compensation: Not made available	Time to hospital: 50 minutes

Protection issued: Not recorded

Protection used: None

Summary of injuries:

severe Back

severe Legs

severe Shoulder

COMMENT: Victim "sustained non-life threatening injuries due to metallic fragmentation". No Medical report was made available.

STATEMENTS

[Statements were provided as pictures of text. Narrative covering the early part of the day has been removed from the re-typed text below.]

Statement from EOD Team Leader No.1

...we returned to our teams and brief them on the task and also included what equipments would be required and personnel protection to be worn. The BAC team set to work and mark the located items found. I am then asked to start to prepare demolition charges which I need to destroy the 10 BLU 63s found. I collect the stores from [Victim No.1] and prepare the charges. The demolition is conducted at 09:45 hrs and then checked and cleared to make sure it was successful which it was.

I then inform [Victim No.1] the box is clear and the BAC team resumes working in the next box, I then continue you to watch the BAC team working sweeping the area. At 10.00 hrs [Victim No.1] call all the teams into the control point for breakfast. During this break he informs me that there is to be another demolition at 10.45 and to get more charges prepared. The demolition is again completed and area cleared with a successful conclusion. Then I return to the control point and report to [Victim No.1]. This is approximately 11.00 hrs.

[Name removed] then tells everyone to stay in the control point as he and [Victim No.2] are going to check out the next task location. During this time I am sat in the ambulance along with [Name removed] the team 5 medic. I hear an explosion and know it was not carried out by us. Shortly afterwards a message come across the radio requesting medic medic come to help us. [Name removed] then informs me to follow him to the incident site. He arrived roughly 10-15 seconds before us. He then tells me and [the Medic] to help [Victim No.2] as he is still moving. We reach [Victim No.2] and as we are carrying towards the ambulance we hear another small explosion and [Name removed] is running towards us. As he reaches us we are putting Victim No.2] into the ambulance which is now almost 300m away from Victim No.1's vehicle. A third larger explosion is heard.

All the teams in the area are informed by [Name removed] to stop and do not proceed any further towards the now much damaged vehicle.

We then make our way to Az-Zubayr hospital accompanied by [Name removed] and another security guard. On arrival [Name removed] informed AO of our location and time. [Victim No.2] is then seen by a doctor who transfers him directly to the general hospital in Basra City accompanied by [the medic]. We the return to the [Demining group] compound and report to [Name removed] the Operations manager.

Signed by witness, Typed by demining group TA.

Statement from BAC 5 Team Leader

....During breakfast EOD 5 start to prepare more charges for a demolition at 10.45 hrs. The demolition is fired and once again it is cleared by the Team Leader and then reports it is successful. As we are still sitting in the rest area [Victim No.1] informs us all to remain there as he and [Victim No.2] go and check the new working area.

A few minutes later at about 11.00 hrs I hear an explosion followed by a radio message asking medic medic we need help. Then [Name removed] and the EOD 5 Team Leader take the ambulance to the incident site. All this time we are sitting in the control point and I inform all the men to remain quiet and then hear a second smaller explosion, followed a few minutes afterwards by a third larger one.

I then see [Name removed] and the ambulance move to a safe area near a Bedouin tent. [Name removed] then informs everyone to stay away from the incident area site. I then hear on the radio that they are taking the casualty to the hospital in Az-Zubayr. I then go to [Name removed] position and am informed by him he is going to escort the ambulance and I and alongside the security section leader are to take control of the area.

I am then contacted by {Name removed} Supervisor and told to move all persons to his location. This we do leaving [Name removed] and an ambulance at the incident site to secure [Victim No.1's] body. Shortly after this we return to the [Demining group] compound.

Signed by witness, Typed by demining group TA.

Statement from Security Team Leader

...I was informed by [Victim No.1] to move the security to the control point and wait there with all the other teams whilst he and [Victim No.2] went and look at the second task of the day.

As we waited here approximately ten minutes later we heard an explosion in the same direction [Victim No.1] had gone. Then a minute or so later a message came over the radio calling the medic medic come and help us. As this was heard, myself along with [Name removed] EOD 5 Team Leader and [Name removed] medic for Team 5 proceeded to the incident site.

On arrival I requested medical cover from the other teams in the area. We stopped short by 30m. I then told [Names removed] to go and treat [Victim No.2] as he was clearly moving. I myself went directly to [Victim No.1] who was lying motionless next to his vehicle. When I got to him it was evident he had died. Also at this time [Names removed] were treating [Victim No.2] about 50m way from the vehicle. As they were moving him into the ambulance 300m away a second explosion was heard which was [Victim No.1's] vehicle exploding.

I then got onto the radio and informed all the other teams making their way to the incident site to stop immediately and proceed no further. After this [Victim No.2] was placed into the ambulance and taken to hospital in Basra city accompanied by [the Medic] in an ambulance. We then returned to the [Demining group] compound.

Signed by witness, Typed by demining group TA.

Statement from EOD 5 Team Medic

... after the break the men continue work as usual and [Victims 1 and 2] go away to check another area. At roughly 11.00 hrs I hear an explosion but it is not a [Demining group] demolition. This was not a large explosion and shortly after this I communicate with the security about this and they inform me that they will go and investigate and contact me if needed.

I then hear medic, medic we need help on the radio, and we then proceed to the incident site. Alongside me in the ambulance in EOD 5 Team Leader [Name removed] and [Name removed] in his own security vehicle. When we arrive at the incident site we check the area and found [Victim No.1] had died and [Victim No.2] had many fragmentation wounds to his body.

As we then proceeded to treat [Victim No.2] and carry him on the stretcher I hear another explosion and continue to carry the casualty to the ambulance. When we reach the ambulance I communicate with HQ and inform them of the nature of the accident, casualties and injuries.

We then remove [Victim No.2] to the hospital at Az-Zubayr. When we arrived here I then inform HQ of this. Then [Victim No.2] is transferred to Basra general hospital in a hospital ambulance which I accompany him and the remainder return to the [Demining group] compound.

Signed by witness, Typed by demining group TA.

Statement from Victim No.2

...I went with the supervisor [Victim No.1] to check the field and when reach it [Victim No.1] leave the car and he moved back to check the area. I stayed beside the car as [Victim No.1] asked me to do. Suddenly I heard a bang behind the car and when I go to see what happened I found [Victim No.1] lay on the ground and he's dead. At once I start shouting and ask for help (medic, medic...) and moving far away from him and the dangerous area with feeling there is clamminess in my body. And when I saw my body I realised that I had been injured and I'm bleeding. Then I fell down on the ground because I bleeding too much. Then the medic [Name removed] with [Name removed] Team Leader came and make the first aid to me. During that I saw there is a fire start behind the car and I told them (the car will explode) then we empty the area and they pick me up inside the ambulance and take me to Azzubayr hospital then to Alganhoury hospital, then to Alshifa'a hospital and the reason of the last movement there is no X ray system work on Algamhoury hospital.

Signed by witness, dated 10th January 2007. No record of who typed it.

Analysis

The device involved in this accident was probably a BLU-61A/B submunition because of its all-ways acting fuze (notorious for being touch-sensitive) and because its incendiary content would explain the resulting fire. The alternative BLU-63 has a much smaller explosive charge, no all-ways acting fuze and no incendiary component. See below for brief information about these munitions.

The accident is classed as a "Handling accident" because Victim No.1 lost both arms and suffered severe abdominal and chest injury. The investigator did not speculate about why Victim No.1 would have been holding the submunition, or why there should have many more in the load-bay of the pick-up. It is clear that there were submunitions in the back of the vehicle for the following reasons. The damage to the vehicle included many penetrations from

inside the load-bay outwards. The scattered munitions, some of which were weathered and aged, were all sitting on the surface. They would have tended to weather in if they had been there any time. It is also unlikely that Victim No.1 would have deliberately parked among visible munitions. There was speculation at the time that the Victims had been the deliberate targets of an Improvised explosive device. This is possible, and might explain why Victim No.1 picked up something (perhaps designed to be intriguing) and examined it, but the alternative view of his having been handling an unstable submunition fits more of the known facts.

It is worth noting that the interview with Victim No.2 did not include asking him why there were munitions in the back of the vehicle. It may well be that the answer would have been embarrassing. This observation illustrates the weakness of an internal accident investigation. The investigators noted that some things must have been the case, but did not list them in their conclusions. It is also worth noting that the investigators approached the vehicle while it was still burning without wearing any PPE. It is not unusual for accident investigators not to wear PPE, but the danger in this place was known to be real and the failure to wear PPE was at best thoughtless.



The primary cause of this accident is listed as “Inadequate training” because the senior field man apparently operated in breach of SOPs by collecting mixed submunitions in an unknown state. The recommendations of the Bol included more training by ex-pat staff. The secondary cause is listed as a “Field control inadequacy” because there were no controls in the field to prevent [Victim No.1] behaving in this way. This was a “Management control inadequacy” but the security situation in Iraq at the times management may be seen as a mitigating circumstance, which National staff being safer in the field.

BLU-61A/B HE fragmentation/Incendiary

This is an aerial dispensed, spin-armed, impact-initiated, high explosive incendiary, anti-material, fragmentation bomb. It is detonated by an M219E1, all-ways acting (omni-directional) fuze. The bomb is painted olive drab without markings. Each hemisphere is made from a coined steel fragmentation liner, and an incendiary liner of zirconium-tin. The hemispheres are encased in a urethane plastic shell. The clamp ring is stainless steel.

Diameter 99mm 277g TNT/HMX Total weight 1 kg



BLU-63 HE fragmentation

These are aerially dispensed, centrifugally armed, high-explosive fragmentation (HE-frag) bombs. The bombs comprise two hemispheres held together by a crimp ring. The BLU-63A and A/B are impact-fired.

These bombs are olive drab with a small yellow dot on one hemisphere. Designation and loading data may be stencilled in yellow. The BLU-63(T-1)/B are painted blue with white markings.

Diameter 76mm HE content: 113g Cyclotol Total weight: 430g

